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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,349	03/30/2004	Tomoo Iijima	040158	2684
38091	7590	04/27/2007	EXAMINER	
TESSERA			LE, THAO X	
LERNER DAVID et al.			ART UNIT	
600 SOUTH AVENUE WEST			PAPER NUMBER	
WESTFIELD, NJ 07090			2814	
			MAIL DATE	DELIVERY MODE
			04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,349	Applicant(s) IIJIMA ET AL.	
	Examiner Thao X. Le	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 52-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 52-54, 56 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6376769 to Chung.

Regarding claims 52 and 56, Chung discloses a wiring circuit panel in fig. 16 comprising: a first metal layer 332, having a major surface extending in lateral direction, said first metal layer 332 including a wiring circuit pattern 313; an insulating film 310, col. 18 line 31, overlying said major surface of said first metal layer 332, said insulating film 310 having a major surface remote from said major surface of said first metal layer 332/313; a plurality of discrete solid metal bumps 315 overlying said first metal layer 332/313 and extending upward through openings in said insulating film 310, said plurality of metal bumps having upwardly facing top faces, said top faces being flush with exposed regions of said major surface of said insulating film 310, fig. 16; and a plurality of solder balls 334 disposed in contact with said top of said plurality of metal bumps 315, said plurality of solder balls 334 being in conductive communication with

said metal bumps 315; and a second circuit panel 340 having a substantially rigid dielectric element (print circuit board), col. 20 line 22 and a second wiring circuit pattern overlying at least a portion of said rigid dielectric element (inherently a printed circuit board has circuit pattern), said second circuit panel 340 being joined to said flexible circuit panel 310 such that said second wiring circuit pattern conductively communicates with said wiring circuit panel of said flexible circuit panel through said plurality of metal bumps 315, fig. 16

Regarding claims 53-54, Chung discloses the wiring circuit wherein the first metal layer and plurality of bumps consist essentially of copper, col. 20 line 4, wherein at least a portion of insulating film 310 is flexible, col. 18 line 31.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 55, 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over 6376769 to Chung in view of Applicant Admitted Prior Art (APA).

Regarding claim 55, Chung does not disclose the wiring circuit panel as claimed in claim 52 wherein said tops of each of said plurality of metal bumps 33 include an upwardly facing concave surface and said plurality of solder balls contact said concave surfaces of said plurality of metal bumps.

However, APA discloses the wiring circuit panel as claimed in claim 52 wherein said tops of each of said plurality of metal bumps 6 include an upwardly facing concave surface, fig. 13G, and said plurality of solder balls 12 contact said concave surfaces of said plurality of metal bumps 6. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the concave surface the teaching of APA with Chung's device, because it would have provided a better mating surface for the solder ball. Furthermore, the Applicant has no support data, which convinces that the particular claimed configuration is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces. In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3,24 (USSC 1878).

Regarding claim 57, Chung discloses the wiring circuit panel as claimed in claim 52, the first metal layer 332/313, said plurality of metal bumps 315 overlying said first metal layer 332/313.

But, Chung does not disclose the wiring circuit panel further including a second metal wherein said second metal layer is an etch stop layer which substantially resists an etchant which would attack a first metal included in said first metal layer.

However, APA discloses the wiring circuit panel further including a second metal 8 (20b) wherein said second metal layer is an etch stop layer which substantially resists an etchant which would attack a first metal 10 (20c) included in said first metal layer, specification page 3 lines 1-7. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the second barrier layer 8 (20b) teaching of APA with Chung's device, because it would have provided the protection for the wiring layer as taught by APA, specification page 3 lines 6-7.

Regarding claims 58-59, Chung discloses the wiring circuit panel as claimed in 57 comprises plurality of metal bumps 315, wherein said plurality of metal bumps 315 and said first metal layer 332/313 consists essentially of a first metal.

The process limitations 'metal bumps are formed by etching a third metal layer overlying said second metal layer' in claim 58 do not carry weight in a claim drawn to structure. In re Thorpe, 277 USPQ 964 (Fed. Cir. 1985).

Response to Arguments

6. Applicant's arguments with respect to claims 52-59 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

11 April 2007

A handwritten signature in black ink, consisting of a stylized 'T' followed by a horizontal line and a vertical line, with a large loop at the end.

THAO X. LE
PRIMARY PATENT EXAMINER